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FIG. 1

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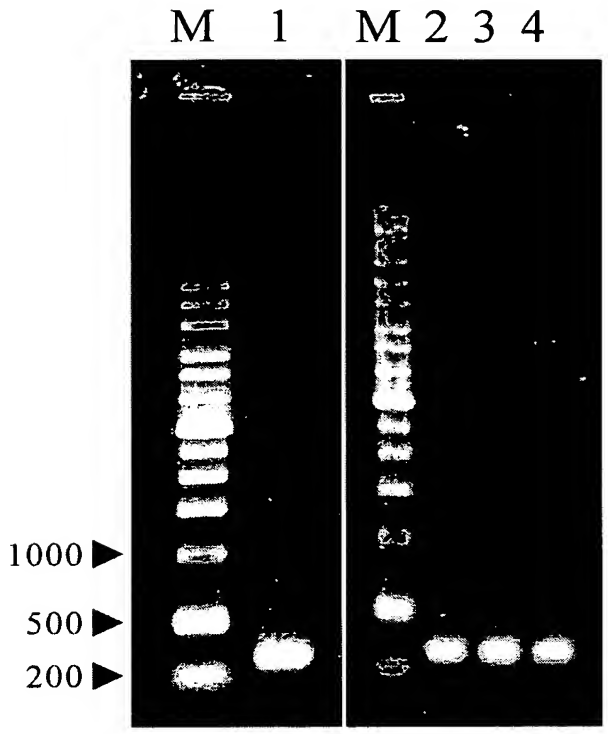


FIG. 2

```
                    1                                                    60
CCRC12913     (1) ------------------------------------------------------------
CCRC14001     (1) ------------------------------------------------------------
  GM-080      (1) ------------------------------------------------------------
CCRC16100     (1) ------------------------------------------------------------
   KLB58      (1) ----------------AACGCTG-CAGCGTGCCTA-TACATGCCAGTCGAACGAGTTCTC
    PB4       (1) ATCCTGGCTCAGGATGAACGCTGGCGGCGTGCCTAATACATGCAAGTCGAACGAGTTCTC
    F31       (1) ----------------AACGCTGGCGGCGTGCCTAATACATGCAAGTCGAACGAGTTCTC
Consensus     (1)

                   61                                                   120
CCRC12913     (1) ------------------------------------------------------------
CCRC14001     (1) ----------------------------------------------------GGTGAGTAC
  GM-080      (1) ----------------------------------------------------GTGAGTAC
CCRC16100     (1) ------------------------------------------------GCGAGGGTGAGTAC
   KLB58     (43) GTTGATGATCGGTGCTTGCACCGAGATTCAACATGGAACGAGTGGCGGACGGGTGAGTAA
    PB4      (61) GTTGATGATCGGTGCTTGCACCGAGATTCAACATGGAACGAGTGGCGGACGGGTGAGTAA
    F31      (45) GTTGATGATCGGTGCTTGCACCGAGATTCAACATGGAACGAGTGGCGGACGGGTGAGTAA
Consensus    (61)                                                 G  GGGTGAGTA

                  121                                                   180
CCRC12913     (1) ----TGGGTA-CCTGCCCTTAAGTGGGGGATAACATTTGGAAACAGATGCTAATACCGCA
CCRC14001    (10) C--GTGGGTA-CCTGCCCTTAAGTGGGGGATAACATTTGGAAACAGATGCTAATACCGCA
  GM-080      (9) C--GTGGGTA-CCTGCCCTTA-GTGGGGGATAACATTTGGAAACAGATGCTAATACCGCA
CCRC16100    (15) C--GTGGGTA-CCTGCCCTTAAGTGGGGGATAACATTTGGAAACAGATGCTAATACCGCA
   KLB58    (103) CACGTGGGTAACCTGCCCTTAAGTGGGGGATAACATTTGGAAACAGATGCTAATACCGCA
    PB4     (121) CACGTGGGTAACCTGCCCTTAAGTGGGGGATAACATTTGGAAACAGATGCTAATACCGCA
    F31     (105) CACGTGGGTAACCTGCCCTTAAGTGGGGGATAACATTTGGAAACAGATGCTAATACCGCA
Consensus   (121) C  GTGGGTA CCTGCCCTTAAGTGGGGGATAACATTTGGAAACAGATGCTAATACCGCA

                  181                                                   240
CCRC12913    (56) TAGATCCAAGAACCGCATGGTTCTTGGCTGAAAGATGGCGTAAGCTATCGCTTTTGGATG
CCRC14001    (67) TAGATCCAAGAACCGCATGGTTCTTGGCTGAAAGATGGCGTAAGCTATCGCTTTTGGATG
  GM-080     (65) TAGATCCAAGAACCGCATGGTTCTTGGCTGAAAGATGGCGTAAGCTATCGCTTTTGGATG
CCRC16100    (72) TAGATCCAAGAACCGCATGGTTCTTGGCTGAAAGATGGCGTAAGCTATCGCTTTTGGATG
   KLB58    (163) TAGATCCAAGAACCGCATGGTTCTTGGCTGAAAGATGGCGTAAGCTATCGCTTTTGGATG
    PB4     (181) TAGATCCAAGAACCGCATGGTTCTTGGCTGAAAGATGGCGTAAGCTATCGCTTTTGGATG
    F31     (165) TAGATCCAAGAACCGCATGGTTCTTGGCTGAAAGATGGCGTAAGCTATCGCTTTTGGATG
Consensus   (181) TAGATCCAAGAACCGCATGGTTCTTGGCTGAAAGATGGCGTAAGCTATCGCTTTTGGATG

                  241                                                   300
CCRC12913    (116) GACCCGCGGCGTATTAGCTAGTTGGTGAGGTAATGGCTCACCAAGGCGATGATACGTAGC
CCRC14001    (127) GACCCGCGGCGTATTAGCTAGTTGGTGAGGTAATGGCTCACCAAGGCGATGATACGTAGC
  GM-080     (125) GACCCGCGGCGTATTAGCTAGTTGGTGAGGTAATGGCTCACCAAGGCGATGATACGTAGC
CCRC16100    (132) GACCCGCGGCGTATTAGCTAGTTGGTGAGGTAATGGCTCACCAAGGCGATGATACGTAGC
   KLB58    (223) GACCCGCGGCGTATTAGCTAGTTGGTGAGGTAATGGCTCACCAAGGCGATGATACGTAGC
    PB4     (241) GACCCGCGGCGTATTAGCTAGTTGGTGAGGTAATGGCTCACCAAGGCGATGATACGTAGC
    F31     (225) GACCCGCGGCGTATTAGCTAGTTGGTGAGGTAATGGCTCACCAAGGCGATGATACGTAGC
Consensus   (241) GACCCGCGGCGTATTAGCTAGTTGGTGAGGTAATGGCTCACCAAGGCGATGATACGTAGC

                  301                                                   360
CCRC12913    (176) CGAACTGAGAGGTTGATCGGCCACATTGGGACTGAGACACGGCCCAAACTCCTACGGGAG
CCRC14001    (187) CGAACTGAGAGGTTGATCGGCCACATTGGGACTGAGACACGGCCCAAACTCCTACGGGAG
  GM-080     (185) CGAACTGAGAGGTTGATCGGCCACATTGGGACTGAGACACGGCCCAAACTCCTACGGN--
CCRC16100    (192) CGAACTGAGAGGTTGATCGGCCACATTGGGACTGAGACACGGCCCAAACTCCTACGGG--
   KLB58    (283) CGAACTGAGAGGTTGATCGGCCACATTGGGACTGAGACACGGCCCAAACTCCTACGGG--
    PB4     (301) CGAACTGAGAGGTTGATCGGCCACATTGGGACTGAGACACGGCCCAAACTCCTACGGG--
    F31     (285) CGAACTGAGAGGTTGATCGGCCACATTGGGACTGAGACACGGCCCAAACTCCTACGGG--
Consensus   (301) CGAACTGAGAGGTTGATCGGCCACATTGGGACTGAGACACGGCCCAAACTCCTACGGG
```

FIG. 3

```
                    361                                                 420
CCRC12913   (236) GGCCAGCAGT-GGGAG----------------------------------------
CCRC14001   (247) GGGCAGCAGT-GGGAG----------------------------------------
  GM-080    (243) GGGCAGCAGT-GGGA-----------------------------------------
CCRC16100   (250) AGGCAGCAGT-GGGA-----------------------------------------
    KLB58   (341) AGGCAGCAGTAGGGAATCTTCCACAATGGACGCAAGTCTGATGGAGCAACGCCGCGTGAG
      PB4   (359) AGGCAGCAGTAGGGAATCTTCCACAATGGACGCAAGTCTGATGGAGCAACGCCGCGTGAG
      F31   (343) AGGCAGCAGTAGGGAATCTTCCACAATGGACGCAAGTCTGATGGAGCAACGCCGCGTGAG
Consensus   (361) AGGCAGCAGT GGGA

                    421                                                 480
CCRC12913   (251) ----------------------------------------------------------
CCRC14001   (262) ----------------------------------------------------------
  GM-080    (257) ----------------------------------------------------------
CCRC16100   (264) ----------------------------------------------------------
    KLB58   (401) TGAAGAAGGCTTTCGGGTCGTAAAACTCTGTTGTTGGAGAAGAATGGTCGGCAGAGTAAC
      PB4   (419) TGAAGAAGGCTTTCGGGTCGTAAAACTCTGTTGTTGGAGAAGAATGGTCGGCAGAGTAAC
      F31   (403) TGAAGAAGGCTTTCGGGTCGTAAAACTCTGTTGTTGGAGAAGAATGGTCGGCAGAGTAAC
Consensus   (421)

                    481                                                 540
CCRC12913   (251) ----------------------------------------------------------
CCRC14001   (262) ----------------------------------------------------------
  GM-080    (257) ----------------------------------------------------------
CCRC16100   (264) ----------------------------------------------------------
    KLB58   (461) TGTTGTCGGCGTGACGGTATCCAACCAGAAAGCCACGGCTAACTACGTGCCAGCAGCCGC
      PB4   (479) TGTTGTCGGCGTGACGGTATCCAACCAGAAAGCCACGGCTAACTACGTGCCAGCAGCCGC
      F31   (463) TGTTGTCGGCGTGACGGTATCCAACCAGAAAGCCACGGCTAACTACGTGCCAGCAGCCGC
Consensus   (481)

                    541                                                 600
CCRC12913   (251) ----------------------------------------------------------
CCRC14001   (262) ----------------------------------------------------------
  GM-080    (257) ----------------------------------------------------------
CCRC16100   (264) ----------------------------------------------------------
    KLB58   (521) GGTAATACGTAGGTGGCAAGCGTTATCCGGATTTATTGGGCGTAAAGCGAGCGCAGGCGG
      PB4   (539) ----------------------------------------------------------
      F31   (523) GGTAATACGTAGGTGGCAAGCGTTATCCGGATTTATTGGGCGTAAAGCGAGCGCAGGCGG
Consensus   (541)

                    601                                                 660
CCRC12913   (251) ----------------------------------------------------------
CCRC14001   (262) ----------------------------------------------------------
  GM-080    (257) ----------------------------------------------------------
CCRC16100   (264) ----------------------------------------------------------
    KLB58   (581) TTTTTTAAGTCTGATGTGAAAGCCCTCGGCTTAACCGAAGAAGCGCATCGGAAACTGGGA
      PB4   (539) ----------------------------------------------------------
      F31   (583) TTTTTTAAGTCTGATGTGAAAGCCCTCGGCTTAACCGAGGAAGCGCATCGGAAACTGGGA
Consensus   (601)

                    661                                                 720
CCRC12913   (251) ----------------------------------------------------------
CCRC14001   (262) ----------------------------------------------------------
  GM-080    (257) ----------------------------------------------------------
CCRC16100   (264) ----------------------------------------------------------
    KLB58   (641) AACTTGAGTGCAGAAGAGGACAGTGGAACTCCATGTGTAGCGGTGAAATGCGTAGATATA
      PB4   (539) ----------------------------------------------------------
      F31   (643) AACTTGAGTGCAGAAGAGGACAGTGGAACTCCATGTGTAGCGGTGAAATGCGTAGATATA
Consensus   (661)
```

FIG. 3 (continued)

```
                    721                                                 780
CCRC12913   (251) ------------------------------------------------------------
CCRC14001   (262) ------------------------------------------------------------
   GM-080   (257) ------------------------------------------------------------
CCRC16100   (264) ------------------------------------------------------------
     KLB58  (701) TGGAAGAACACCAGTGGCGAAGGCGGCTGTCTGGTCTGTAACTGACGCTGAGGCTCGAAA
      PB4   (539) ------------------------------------------------------------
       F31  (703) TGGAAGAACACCAGTGGCGAAGGCGGCTGTCTGGTCTGTAACTGACGCTGAGGCTCGAAA
Consensus   (721)

                    781                                                 840
CCRC12913   (251) ------------------------------------------------------------
CCRC14001   (262) ------------------------------------------------------------
   GM-080   (257) ------------------------------------------------------------
CCRC16100   (264) ------------------------------------------------------------
     KLB58  (761) GCATGGGTAGCGAACAGGATTAGATACCCTGGTAGTCCATGCCGTAAACGATGAATGCTA
      PB4   (539) ------------------------------------------------------------
       F31  (763) GCATGGGTAGCGAACAGGATTAGATACCCTGGTAGTCCATGCCGTAAACGATGAATGCTA
Consensus   (781)

                    841                                                 900
CCRC12913   (251) ------------------------------------------------------------
CCRC14001   (262) ------------------------------------------------------------
   GM-080   (257) ------------------------------------------------------------
CCRC16100   (264) ------------------------------------------------------------
     KLB58  (821) GGTGTTGGAGGGTTTCCGCCCTTCAGTGCCGCAGCTAACGCATTAAGCATTCCGCCTGGG
      PB4   (539) ------------------------------------------------------------
       F31  (823) GGTGTTGGAGGGTTTCCGCCCTTCAGTGCCGCAGCTAACGCATTAAGCATTCCGCCTGGG
Consensus   (841)

                    901                                                 960
CCRC12913   (251) ------------------------------------------------------------
CCRC14001   (262) ------------------------------------------------------------
   GM-080   (257) ------------------------------------------------------------
CCRC16100   (264) ------------------------------------------------------------
     KLB58  (881) GAGTACGACCGCAAGGTTGAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGTGGAG
      PB4   (539) ------------------------------------------------------------
       F31  (883) GAGTACGACCGCAAGGTTGAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGTGGAG
Consensus   (901)

                    961                                                1020
CCRC12913   (251) ------------------------------------------------------------
CCRC14001   (262) ------------------------------------------------------------
   GM-080   (257) ------------------------------------------------------------
CCRC16100   (264) ------------------------------------------------------------
     KLB58  (941) CATGTGGTTTAATTCGAAGCAACGCGAAGAACCTTACCAAGTCTTGACATCTTTTGATCA
      PB4   (539) ------------------------------------------------------------
       F31  (943) CATGTGGTTTAATTCGAAGCAACGCGAAGAACCTTACCAAGTCTTGACATCTTTTGATCA
Consensus   (961)

                   1021                                                1080
CCRC12913   (251) ------------------------------------------------------------
CCRC14001   (262) ------------------------------------------------------------
   GM-080   (257) ------------------------------------------------------------
CCRC16100   (264) ------------------------------------------------------------
     KLB58 (1001) CCTGAGAGATCAGGTTTCCCCTTCGGGGGCAAAATGACAGGTGGTGCATGGTTGTCGTCA
      PB4   (539) ------------------------------------------------------------
       F31 (1003) CCTGAGAGATCAGGTTTCCCCTTCGGGGGCAAAATGACAGGTGGTGCATGGTTGTCGTCA
Consensus  (1021)
```

FIG. 3 (continued)

```
                    1081                                                1140
CCRC12913   (251)   ------------------------------------------------------------
CCRC14001   (262)   ------------------------------------------------------------
   GM-080   (257)   ------------------------------------------------------------
CCRC16100   (264)   ------------------------------------------------------------
    KLB58  (1061)   GCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATGACTAGTTG
      PB4   (539)   ------------------------------------------------------------
      F31  (1063)   GCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATGACTAGTTG
Consensus  (1081)

                    1141                                                1200
CCRC12913   (251)   ------------------------------------------------------------
CCRC14001   (262)   ------------------------------------------------------------
   GM-080   (257)   ------------------------------------------------------------
CCRC16100   (264)   ------------------------------------------------------------
    KLB58  (1121)   CCAGCATTTAGTTGGGCACTCTAGTAAGACTGCCGGTGACAAACCGGAGGAAGGTGGGGA
      PB4   (539)   ------------------------------------------------------------
      F31  (1123)   CCAGCATTTAGTTGGGCACTCTAGTAAGACTGCCGGTGACAAACCGGAGGAAGGTGGGGA
Consensus  (1141)

                    1201                                                1260
CCRC12913   (251)   ------------------------------------------------------------
CCRC14001   (262)   ------------------------------------------------------------
   GM-080   (257)   ------------------------------------------------------------
CCRC16100   (264)   ------------------------------------------------------------
    KLB58  (1181)   TGACGTCAAATCATCATGCCCCTTATGACCTGGGCTACACACGTGCTACAATGGATGGTA
      PB4   (539)   ------------------------------------------------------------
      F31  (1183)   TGACGTCAAATCATCATGCCCCTTATGACCTGGGCTACACACGTGCTACAATGGATGGTA
Consensus  (1201)

                    1261                                                1320
CCRC12913   (251)   ------------------------------------------------------------
CCRC14001   (262)   ------------------------------------------------------------
   GM-080   (257)   ------------------------------------------------------------
CCRC16100   (264)   ------------------------------------------------------------
    KLB58  (1241)   CAACGAGTTGCGAGACCGCGAGGTCAAGCTAATCTCTTAAAGCCATTCTCAGTTCGGACT
      PB4   (539)   ------------------------------------------------------------
      F31  (1243)   CAACGAGTTGCGAGACCGCGAGGTCAAGCTAATCTCTTAAAGCCATTCTCAGTTCGGACT
Consensus  (1261)

                    1321                                                1380
CCRC12913   (251)   ------------------------------------------------------------
CCRC14001   (262)   ------------------------------------------------------------
   GM-080   (257)   ------------------------------------------------------------
CCRC16100   (264)   ------------------------------------------------------------
    KLB58  (1301)   GTAGGCTGCAACTCGCCTACACGAAGTCGGAATCGCTAGTAATCGCGGATCAGCACGCCG
      PB4   (539)   ------------------------------------------------------------
      F31  (1303)   GTAGGCTGCAACTCGCCTACACGAAGTCGGAATCGCTAGTAATCGCGGATCAGCACGCCG
Consensus  (1321)

                    1381                                                1440
CCRC12913   (251)   ------------------------------------------------------------
CCRC14001   (262)   ------------------------------------------------------------
   GM-080   (257)   ------------------------------------------------------------
CCRC16100   (264)   ------------------------------------------------------------
    KLB58  (1361)   CGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACACCATGAGAGTTTGTAACA
      PB4   (539)   ------------------------------------------------------------
      F31  (1363)   CGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACACCATGAGAGTTTGTAACA
Consensus  (1381)
```

FIG. 3 (continued)

```
                    1441                                                1500
CCRC12913   (251)   ------------------------------------------------------------
CCRC14001   (262)   ------------------------------------------------------------
   GM-080   (257)   ------------------------------------------------------------
CCRC16100   (264)   ------------------------------------------------------------
    KLB58  (1421)   CCCGAAGCCGGTGGCGTAACCCTTTTAGGGAGCGAGCTGTCTAAGGTGGGACAAATGATT
      PB4   (539)   ------------------------------------------------------------
      F31  (1423)   CCCGAAGCCGGTGGCGTAACCCTTTTAGGGAGCGAGCTGTCTAAGGTGGGACAAATGATT
Consensus  (1441)

                    1501                    1537
CCRC12913   (251)   ----------------------------------
CCRC14001   (262)   ----------------------------------
   GM-080   (257)   ----------------------------------
CCRC16100   (264)   ----------------------------------
    KLB58  (1481)   AGGGTGAAGTCGTAACAAGGTAGCTAAAGGAGA----
      PB4   (539)   ----------------------------------
      F31  (1483)   AGGGTGAAGTCGTAACAAGG-AGCTGTAGGAGAACTA
Consensus  (1501)
```

FIG. 3 (continued)

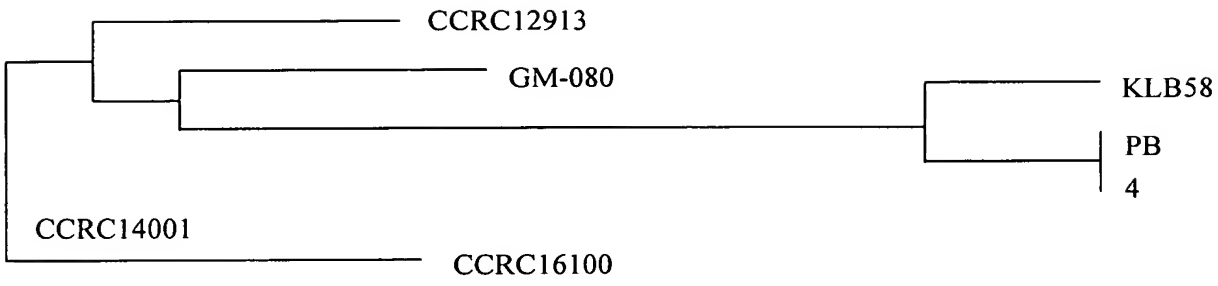


FIG. 4

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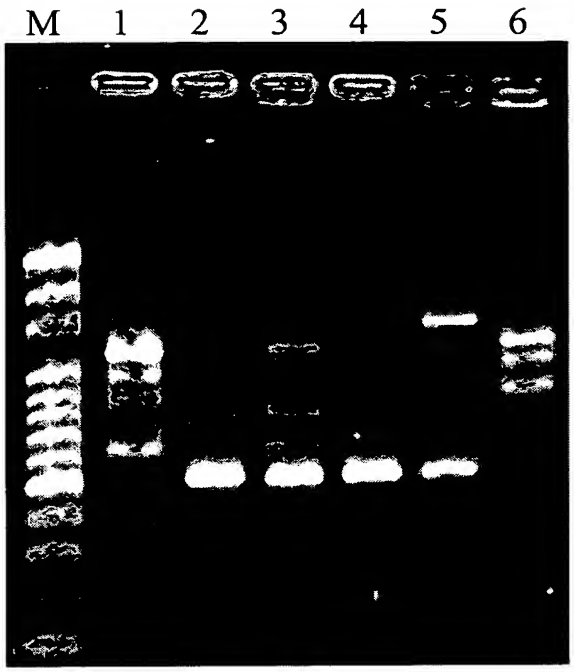


FIG. 5

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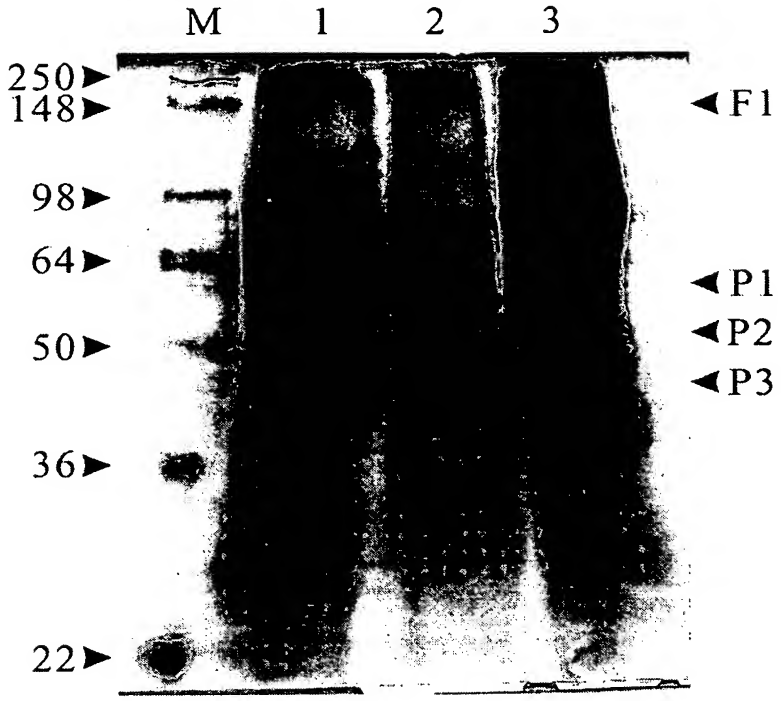


FIG. 6

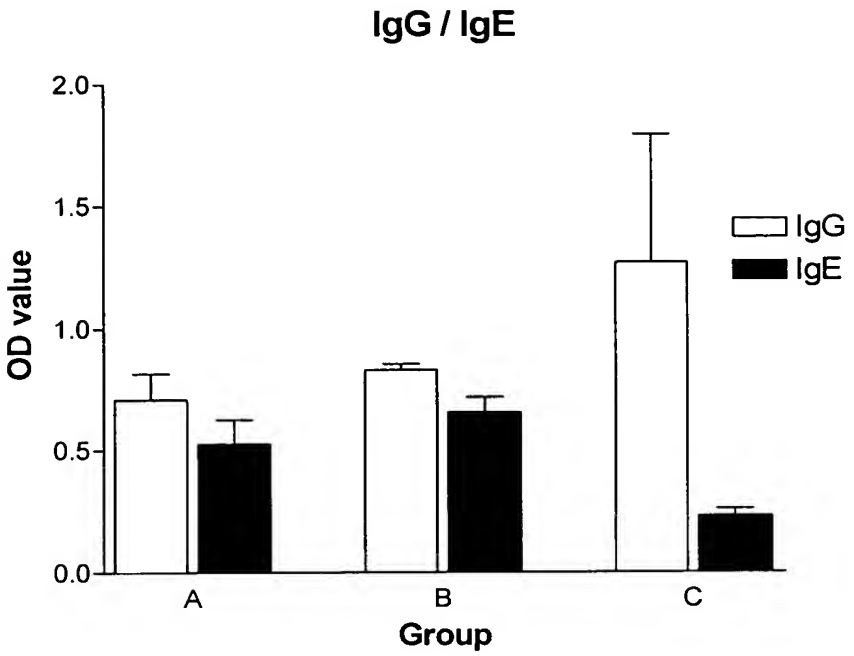


FIG. 7

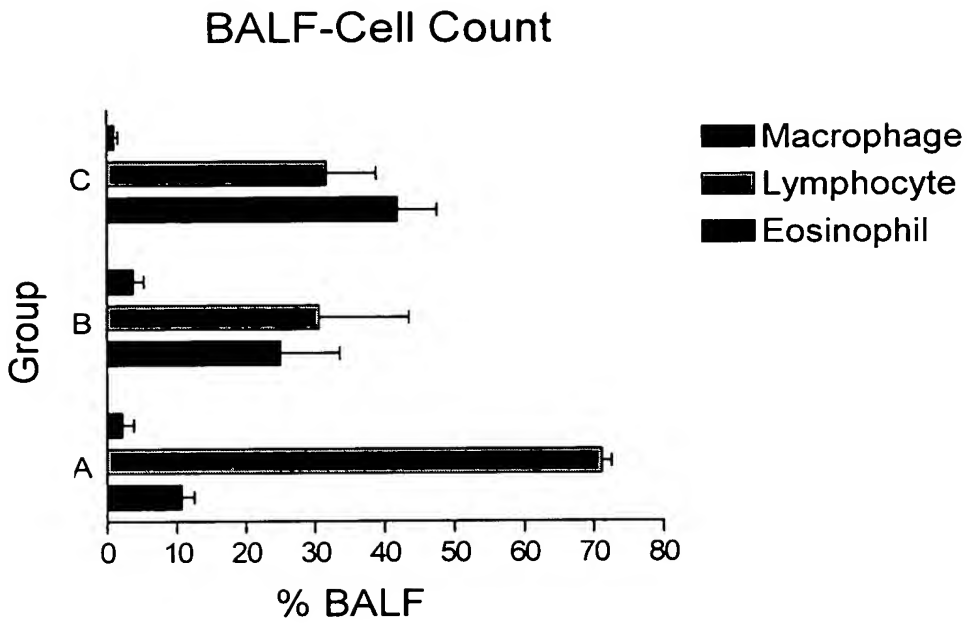
BALF-Cell Count
Macrophage
Lymphocyte
Eosinophil
Group
C
B
A
0
10
20
30
40
50
60
70
80
% BALF

FIG. 8

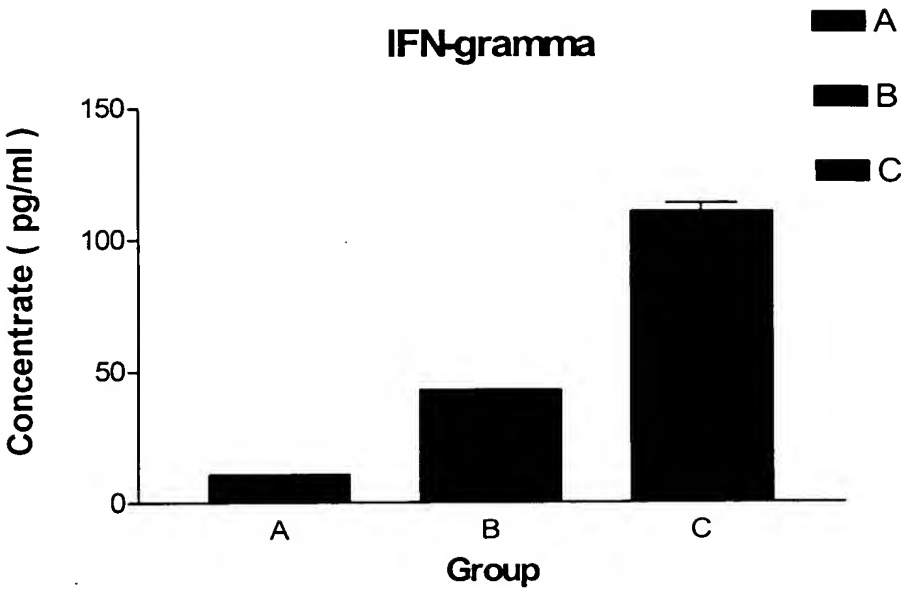


FIG. 9

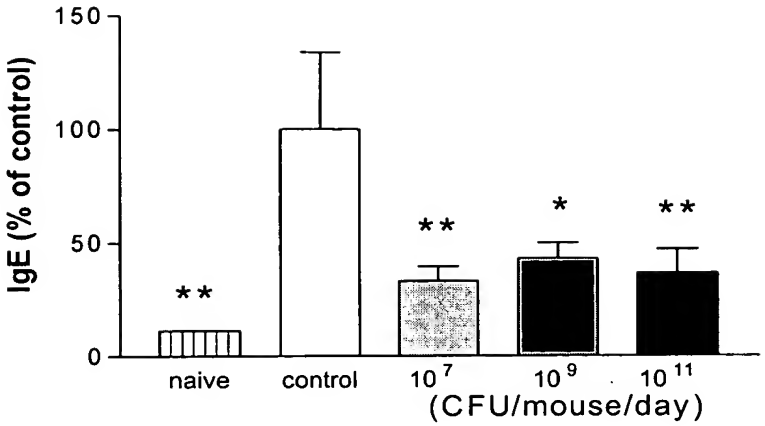
150
100
50
0
IgE (% of control)
**
**
*
**
naive
control
10 7
10 9
10 11
(CFU/mouse/day)

FIG. 10